

DETAILED ACTION

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List of Prior Art

U.S. Patent No. 5,633,951 ("Moshfeghi").

Amendments & Claim Status

[1] This office action is responsive to "Amendment" received Sep. 18, 2009. Claims 1-9 remain pending.

Drawings

[2] The replacement drawings were received on Sep. 18, 2009 and are acceptable. In response to Amendment at 6, the previous drawing objections are withdrawn.

Response to Arguments

Remarks Moot regarding Rejections Under 35 U.S.C. § 102, 103

[3] Amendment at 7-9 regarding rejected claims 1-4 and 8-9 under 35 U.S.C. § 102(b) as being anticipated by Okazaki (U.S. Pub. No. 2003/0206645); and rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Okazaki in view of Moshfeghi (U.S. Patent No. 5,633,951) have been respectfully and fully considered, but are now moot in view of the new grounds of rejection.

Claim Objections

- [4] In response to Amendment at 6, the previous claim objections are withdrawn.

Claim Rejections - 35 U.S.C. § 101, 112

- [5] In response to Amendment at 6, the previous § 101, 112 rejections are withdrawn.
[6] The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Failure to Particularly Point Out and Distinctly Claim

- [7] **Claim 9** is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9, line 1 (emphasis added), “a computer-readable medium” is unclear what element in the specification it explicitly refers to (i.e., it may be a program or processor). It is suggested to change to “computer-readable ~~medium~~ device”.

Claim Rejections - 35 U.S.C. § 102

- [8] The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Moshfeghi

[9] **Claims 1 and 7-9** are rejected under 35 U.S.C. § 102(b) as being anticipated by Moshfeghi.

Regarding **claim 1**, Moshfeghi discloses a method of registering (fig. 2, item 44) a first image ("VOLUME 1" at fig. 2; a 3D volume image comprising e.g., the contours of fig. 3) and a second image ("VOLUME 2" at fig. 2; another 3D volume image comprising e.g., the contours of fig. 3), the method comprising the steps of:

selecting, by an image processing device (fig. 1, item 16), at least one first landmark ("patch surface vertices of the respective first. . . volumetric image[[s]]" at 3:58-63¹) in the first image;

selecting, by an image processing device, at least one second landmark ("patch surface vertices of the respective. . . second volumetric image[[s]]" at 3:58-63) in the second image; and

registering (fig. 2, item 44), by an image processing device, the first and second images by using a similarity value (fig. 2, item 38; "a similarity measure between surface patches" at 7:61-64 as outlined at 8:12-63; fig. 5) which relates to a similarity of a first region determined by the at least one first landmark and a second region in the second image determined by the at least one second landmark;

wherein the at least one first landmark corresponds (i.e., "[f]or each vertex point in each surface, find the nearest triangle surface path from the other surface based on a distance measure. . ." at 7:61-64; fig. 5) to the at least one second landmark, and

wherein the registering includes determining a local deformation field (e.g., the "surface tiling by triangular patch surface formation" at 3:50-52; fig. 4 pertaining to Volume 2 that undergoes deformation at fig. 2, item 42) for the at least one second landmark.

Regarding **claim 7**, Moshfeghi discloses wherein the method is applied in medical imaging to one of CT data sets, MRI data sets ("MR and CT imagers" at 4:40), PET data sets, SPECT data sets, and ultrasonic imaging data sets.

Regarding **claim 8**, claim 1 cites identical features as in claim 8, including a memory (the inherent memory in fig. 1, items 12, 14, 16) for storing the first image and the second image; and an image processor (fig. 1, item 16) for registering the first image and the

¹ "3:58-63" short notation for "Col. 3, lines 58-63".

second image; wherein the image processor is adapted to perform the method-steps of claim 1. Thus, references/arguments equivalent to those presented above for claim 1 are equally applicable to claim 8.

Regarding **claim 9**, claim 1 cites identical features as in claim 9, including a computer program (the inherent computer program in fig. 1, memory items 12, 14, 16) on a computer-readable medium (the inherent memory in fig. 1, items 12, 14, 16) for registering a first and a second image, wherein the computer program causes a processor (fig. 1, item 16) to perform the method-steps of claim 1 when the computer program is executed on the processor. Thus, references/arguments equivalent to those presented above for claim 1 are equally applicable to claim 8.

Allowable Subject Matter

[10] **Claims 2-7** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for Indicating Allowable Subject Matter

[11] The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 2**, while the prior art of record teaches claim 1, the prior art of record does not teach wherein the second number is the first number plus one; wherein the first and second landmarks are selected in accordance with a qualifying function, and wherein the third number is equal to the second number.

Conclusion

Citation of Pertinent Prior Art

[12] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure US 6226418 B1; US 20020054699 A1; US 6438253 B1; US 20030128890 A1; US 20060034500 A1.

[13] Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

[14] Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578 and fax number (571)270-2578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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